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TALKS ON INSECT PESTS.

XI.—The Strawberry Weevil.

Editors Progressive Farmer:

The work of this insect is familiar to the growers in this State through all the country from Mt. Olive to Wilmington and from there west to Chadbourn. It has been known as a pest in this region for the past four or five years and seems to be rapidly gaining in numbers and destructiveness. It has at one time or another been destructive in most of the eastern States, especially north of North Carolina, and even in Canada.

THE INSECT.

It is the mature, adult insect which does the damage, and strange as it may seem, there are growers right in the midst of the weevil district, who have lost money from its ravages every year for four or five years, who have never yet learned the insect sufficiently well to recognize it positively. The adult beetle is a little larger than the head of a good-sized pin and more elongated, of course. It is of a chestnut-brown color, and has on each side of the body a black spot which is surrounded by a gray border. From the head there projects a snout of a little more than one-half the length of the body. There are any number of other beetles of about the same size, but the spots, one on each side of the middle of the back, and the snout projecting from the head; these two points taken together with the chestnut-brown color, will enable any intelligent, keen-eyed person to recognize it with certainty.

CHARACTER OF INJURY.

The injury by this insect consists in depositing eggs within unopened buds, and then severing the stalks so that the buds wilt and finally drop to the ground. In this way, one female insect will often destroy many buds. We have counted as high as eighty cut buds on a single hill.

LIFE-HISTORY.

During the strawberry season just closed, Mr. R. W. Collett and the writer were able to make quite extended observations on this insect—our principal field of operations being at Wallace, in the very heart of the weevil district. We were thus able to corroborate many points in the life-history of the insect which had been recorded before, and added some original and valuable observations of our own. Thorough knowledge of the life-history and habits are essential to secure the best results in combating this pest.

The adult weevils were first observed on March 31st and on April 4th, Mr. Collett found them abundant, mating, laying eggs and cutting the buds. On April 12th, we found that the eggs were hatching to tiny, white, footless grubs inside the now fallen buds. On June 5th, Mr. Collett found that the grubs were transforming to pupae (still inside the buds), and that many of the pupae

had developed into adult beetles which had emerged. At that date adults, pupae, and grown larvae, were still abundant in the fields, although the last picking of fruit had been some two weeks previous. Here, then, had been two weeks when the vines were useless, that the insects were coming to maturity undisturbed. We will see later what may be done at that time.

Although adults were numerous at Wallace on June 5th, Mr. Collett did not find them mating, but he did find many of them on the flowers of certain wild plants in the woods, especially the gall-berry. In fact, at that time the whole trend of movement seemed to be from the strawberry fields where the insects were maturing, to the woods. There were no efforts being made to provide for another generation, and this observation is exactly in accord with those of other investigators. Indeed, it seems pretty well established now that there is only one annual generation of the weevil, namely, those which reach maturity immediately after the picking season. Therefore the same adult weevils which Mr. Collett found migrating to the woods on June 5th, will come forth from their winter quarters next spring, to cut the buds. There is no time in the life of the insect from the time that the eggs is laid until the adult emerges, that is spent outside the very bud in which the eggs is laid. The larva (grub) does not go from one bud to another, and there is no time when it enters the ground. It is always in that bud in which it hatches from the egg.

HABITS.

The principal food of the insect, both in the beetle and grub state, is pollen, hence it attacks the pollen-bearing varieties (the "perfect bloomers") much more than the others. It so happens that many of the most highly prized varieties are perfect bloomers. The adult insect can fly freely, although it seems seldom to do so; the usual mode of escape being to simply double up the legs and roll, or drop, to the ground. It does not "jump" as some have described to me. The adult beetles may be found on a large number of flowers, but they only seem to cut and deposit eggs in a few, principal among which are the strawberry, blackberry, dewberry, red-bun, cinque-foil and rose. We found the adult insects mating, depositing eggs and cutting the buds of roses growing on the porch of the Boney House, at Wallace, on April 28th.

WHERE DOES THE INSECT PASS THE WINTER?

As yet, it is impossible to say definitely just how and where the insects hibernate. It seems certain that they winter in the adult stage, and it also seems certain that they hibernate around the edges of the field or in the woods; but exactly where, whether in stumps, rotten logs, under trash, rubbish and leaves, or under the surface of the earth, remains a question. Two whole days of careful search (on March 9th and 10th) under bark, sifting dirt, trash, pine-straw, etc., failed to throw any light on this question, for although I found a considerable number of other insects, no evidence of weevil was to be found. From careful observation and search, I am convinced that they are not brought into the fields in the pine

straw, for if that were the case they would appear as soon and as abundantly in one part of the field as the other. I have carefully sifted over a good deal of the straw, both in the woods, in the piles where it had been all winter, and in the field after it had been distributed, without finding any trace of the weevils. There is yet opportunity for some enterprising grower to fill this gap in our knowledge of the pest.

REMEDIES FOR THE PEST

In our work at Wallace, Mr. Collett made practical applications of nine different treatments on our little experimental plat on the place of Mr. J. A. Westbrook. Among these we used "spirittine," a preparation which has recently been used against insects on truck crops. Other tests were with air-slaked lime, bordeaux mixture and paris green, carbolic acid in water, whale oil soap in water and others. The plat was in one side of a field of about thirty acres in which no efforts were being made to keep the insects in check. Our experiments, therefore, had to be along the line of securing an immediate result. No treatment could be applied with a view of lessening damage another year, since the plat would be open to invasion from all the surrounding fields. Our experiments demonstrated one thing thoroughly—that there is little or no hope of ever securing any direct remedy. On all rows, no matter what treatment was applied, the weevil was seriously, and about equally, destructive. Both carbolic acid solution and spirittine solution were used at so great strength as to seriously burn the foliage on some plants, yet with absolutely no result on the weevil. The vines sprayed with bordeaux and paris green will no doubt be benefited by protection from rust and other troubles, but the treatment did not mitigate the weevil injury in the least. In previous years others have tried various other treatments so exhaustively that we did not feel it necessary to repeat their work. Indeed, as a summary, we may say that we see no hope of any material being used as a spray or dust application which will be of material benefit, and we are positive in the conviction that the best results will be secured through the planting of other varieties, clean culture of beds, the burning of trash, and especially of ditch banks overgrown with dewberries, and the prompt cleaning up of fields immediately after the picking is over. Let us consider these a little more in detail.

PLANTING OTHER VARIETIES.

The insect attacks chiefly the staminate varieties (those which bear pollen), although it is a fact that they do attack the others to some extent. The varieties at present most extensively grown in the strawberry section are the (1) Excelsior, (2) Thompson, (3) Heflin, (4) McKinley, (5) Duff, (6) Dixie Belle, and (7) Profit. Of these the first four are perfect bloomers, and hence fully liable to attack. The last three are imperfect bloomers, and hence not so much attacked. It seems impossible to produce an imperfect blooming berry which will mature fruit as early as the perfect bloomers, for which reason those

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